NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATIONS

IRRIGATION SYSTEM, MICROIRRIGATION

SUBSURFACE DRIP IRRIGATION

(No. and Acre)

CODE 441

1. SCOPE

The work shall consist of furnishing and installing a Subsurface Drip Irrigation (SDI) System including lateral lines, main and submain pipelines, manifolds, flush lines, filter system and control station plus needed fittings and appurtenances.

2. LOCATION

The Subsurface Drip Irrigation System shall be located as shown on furnished drawings/map or as staked in the field

3. PUBLIC AND PRIVATE UTILITIES

Utilities are defined to be overhead and underground power or communication lines, and pipelines. All utilities discovered to be in the work area are shown on the drawings or sketches. However, the absence of indicators on the drawings or sketches does not assure the nonexistence of utilities in the work area. The contractor is alerted to conduct his/her own search and discovery for utilities in order to lessen or avoid potential damages. The owner/operator shall complete TX-ENG-80, UTILITIES INVENTORY prior to layout or any ground disturbance and return it to a NRCS representative.

4. INSTALLATION and MATERIALS

All materials used in the installation of the Subsurface Drip Irrigation system shall be new and free from defects. All applicable manufacture recommendations on the installation, flushing and initial pressurizing of the system and individual system components shall be followed The emitter shall be installed with the orifice pointing up, allowing sediments and organic particles to settle along the bottom of the lateral line. Lateral line depth and spacing shall be based on type of product, soil type and planned crop.

Installation of all components of the SDI system will be in accordance with the design. Items such as lateral length and type, number of laterals per zone, and pipe size and location all affect the hydraulic performance and system efficiency. Any changes or additions to the design layout will be done in consultation with the designer and approved by NRCS prior to installation.

After installation, the system shall be pressure tested at the system operating pressure. All leaks shall be repaired to insure a leak-free system.

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5. SYSTEM AIR VACUUM RELIEF

Adequate air/vacuum relief must be provided for in the SDI system to minimize soil ingestion back into the emitters during shutdown. This vacuum effect on shutdown and draining can be reduced by ensuring that properly sized air/vacuum valves are installed at all high points in the zone or block.

6. MAIN AND SUB-MAIN PIPELINES

Main and sub-main lines shall be designed and installed according to NRCS conservation practice standard Irrigation Water Conveyance, Pipelines, Code 430.

Minimum Depth of Cover: The pipe shall be installed at a sufficient depth below the ground surface to provide protection from hazards imposed by traffic crossings, farming operations, freezing temperatures, or soil cracking. The minimum depth of cover for pipe susceptible to any of these hazards shall be:

Pipe Diameter	*Depth of Cover*
In.	*In.*
½ through 2 ½	*18*
3 through 5	*24*
6 or more	*30*

A check valve shall be installed between the pump discharge and pipeline where backflow may occur.

A pressure-relief valve shall be installed between the pump discharge and the pipeline if excessive pressure can build up when all valves are closed. Pressure-relief valves shall be installed on the discharge side of the check valve where a reversal of flow may occur and at the end of the pipeline if needed to relive surge pressures.

If needed to provide positive means for air escape during filling and air entry while emptying , air-and vacuum valves or combination air valve shall be installed at all summits, at the entrance, and at the end (s) of all pipelines . Such valves are generally needed if the pipeline is truly closed to the atmosphere. However, they may not be needed if other features of the pipe system adequately vent the pipeline during filling and emptying operations.

7. CHEMIGATION SAFETY

All applicable Federal, state and local laws and regulations in regards to backflow prevention shall be followed in the installation of the system) All irrigation distribution systems into which any type of chemical (except disinfecting agents) or other foreign substances will be injected into the water pumped from water wells shall be equipped with an in-line, automatic quick-closing check valve capable of preventing pollution of the ground water in accordance with TAC Title 16, Part 4, Chapter 76.1007.

8. OPERATION and MAINTENANCE PLAN

An operation and maintenance (O&M) plan shall provide specific instructions for operating and maintaining the system to ensure that it functions properly, including reference to periodic inspections and the prompt repair or replacement of damaged components. This O&M plan can be furnished by the installing dealer and/or product manufacturer.

9. MEASUREMENT

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The amount of the Subsurface Drip Irrigation System completed as specified will be determined by measuring the area, in acres to the nearest 0.1 acres.

10. CONSTRUCTION DETAILS